Section 4. Cholinergic mechanisms in anesthesia

Approaches to proving there are general anesthetic sites on ligand gated ion channels
K.W. Miller, G.H. Addona, M.A. Kloczewiak (USA) 139
Neuronal nicotinic acetylcholine receptor modulation by general anesthetics
P. Flood, L.W. Role (USA) 149
Interactions of general anesthetics within the pore of an ion channel
M. Barann, I. Wenningmann, J.P. Dilger (Germany, USA) 155
Conformational transitions of the nicotinic acetylcholine receptor as a model for anesthetic actions on ligand-gated ion channels: single and sequential mixing stopped-flow fluorescence studies
D.E. Raines (USA) 163
Direct interactions of anesthetics and nonanesthetics with the nicotinic acetylcholine receptor pore
S.A. Forman (USA) 169
Anesthetic-induced structural changes in the nicotinic acetylcholine receptor
S.E. Ryan, H.P. Nguyen, J.E. Baenziger (Canada) 179
Ion channel modulation as the basis for general anesthesia
T. Narahashi, G.L. Aistrup, J.M. Lindstrom, W. Marszalec, K. Nagata, F. Wang, J.Z. Yeh (USA) 185

Section 5. GABAergic mechanisms in anesthesia

The molecular mechanism of action of general anesthetics: structural aspects of interactions with $GABA_A$ receptors
R.W. Olsen (USA) 193
GABAergic mechanisms in the action of general anesthetics
K. Hirota, S.H. Roth, J. Fujimura, A. Masuda, Y. Ito (Japan, Canada) 203
Distinct structural requirements for the direct and indirect actions of the anaesthetic etomidate at $GABA_A$ receptors
E.J. Moody, C.S. Knauer, R. Granja, Marina Strakhovaua, P. Skolnick (USA) 209
General anaesthetics and their effects on $GABA_A$ receptor desensitization
B.A. Orser, L.C. McAdam, S. Roder, J.F. MacDonald (Canada) 217
Volatile anesthetics and a volatile convulsant differentially affect $GABA_A$ receptor–chloride channel complex
Y. Ikemoto, M. Yamashita, T. Yano (Japan) 225
Functional characteristics of recombinant human $GABA_A$ receptors containing the ϵ-subunit
S.-A. Thompson, T.P. Bonnert, P.J. Whiting, K.A. Wafford (UK) 233
Alcohol effects on the $5\text{-}HT_3$ ligand-gated ion channel
D.M. Lovinger, Q. Zhou (USA) 239

Section 6. Anaesthetic actions on sodium and potassium channels

Molecular and kinetic determinants of local anaesthetic action on sodium channels
R.J. French, G.W. Zamponi, I.E. Sierralta (Canada) 247
Volatile anesthetics significantly suppress central and peripheral mammalian sodium channels
D.S. Duch, B. Rehberg, T.N. Vysotskaya (USA) 255
The volatile anesthetic enflurane activates capacitative Ca^{2+} channels in rat glioma C6 cells
P.W.L. Tas, N. Roewer (Germany) 265
Effects of volatile anaesthetics on a high conductance calcium dependent potassium channel in cultured hippocampal neurons
J. McLarnon, D. Sawyer (Canada) 271
Open channel block and open channel destabilization: contrasting effects of phenol, TEA^+ and local anaesthetics on Kv1.1 K^+ channels
A.A. Elliott, J.A. Harrold, J.P. Newman, J.R. Elliott (UK) 277
Activation of single potassium channels in rat cerebellar granule cells by volatile anesthetics
B.D. Winegar, C.S. Yost (USA) 287
Baseline K^+ channels as targets of general anesthetics: studies of the action of volatile anesthetics on TOK1
C. Spencer Yost, A.T. Gray, B.D. Winegar, D. Leonoudakis (USA) 293

Section 7. Genetic approaches

Genetic dissection of the molecular target(s) of anesthetics with the gene knockout approach in mice
G.E. Homanics, J.J. Quinlan, R. Mihalek, L.L. Firestone (USA) 301

A quantitative genetic approach towards volatile anesthetic mechanisms in *C. elegans*
B. van Swinderen, A. Galifianakis, C.M. Crowder (USA) 309
Influence of anesthetics on endogenous and recombinantly expressed G protein-coupled receptors in the *Xenopus* oocyte
G.W. Nietgen, C.W. Hönemann, M.E. Durieux (USA) 319
Molecular genetical analysis of *Drosophila* ether sensitive mutants
S. Gamo, K. Dodo, H. Matakatsu, Y. Tanaka (Japan) 329
Control of anesthetic response in *C. elegans*
B. Kayser, S. Rajaram, S. Thomas, P.G. Morgan, M.M. Sedensky (USA) 339

Section 8. Physicochemical mechanisms in anesthesia

Unifying characteristics of sites of anesthetic action revealed by combined use of anesthetics and non-anesthetics
Y. Xu, P. Tang, S. Liachenko (USA) 347
The effects of temperature and pressure on the thermodynamic activity of anesthetics
Y. Kaminoh, H. Kamaya, C. Tashiro, I. Ueda (Japan, USA) 353
Molecular similarity analysis: an alternative approach to studying molecular mechanisms of anaesthesia
J.C. Sewell, M.J. Halsey (UK) 359
Correlation between pharmacological potency and micellar surface potential of local anesthetic
S. Yokoyama (Japan) 365

Section 9. Anesthetic—protein interactions

Probing the structural features of volatile anesthetic binding sites with synthetic peptides
J.S. Johansson (USA) 369
Computer simulation study of synthetic 4-helix bundle that binds halothane
A.B. Woska, M.L. Klein, D. Scharf (USA) 377
Volatile anesthetics alter protein stability
J.W. Tanner, P.A. Liebman, R.G. Eckenhoff (USA) 387
The uncoupling of bacteriorhodopsin by high temperature and anaesthetics
M.M. Gao, F. Boucher (Canada) 393
Binding of volatile anesthetics to purple membranes studied by X-ray diffraction
T. Hamanaka, T. Nakagawa, Y. Kito, S. Nishimura, I. Uchida, T. Mashimo (Japan) 397
Do anesthetics act by competitive binding to specific receptors? Phase transition of firefly luciferase
I. Ueda, A. Suzuki, H. Kamaya (USA) 405

Section 10. Anesthetic modulation of membrane lipids

Evaluation of forcefields for molecular mechanics/dynamics calculations involving halogenated anesthetics
J.R. Trudell, E. Bertaccini (USA) 413
Concentrations of anesthetics across the water–membrane interface; the Meyer–Overton hypothesis revisited
A. Pohorille, M.A. Wilson, M.H. New, C. Chipot (USA) 421
Dipole potentials and spontaneous curvature: membrane properties that could mediate anesthesia
D.S. Cafiso (USA) 431
Membrane-buffer partition coefficients of a local anesthetic tetracaine monitored by an anesthetic sensor; effects of temperature and pH
H. Satake, T. Kageyama, H. Matsuki, S. Kaneshina (Japan) 441
Effects of halothane and supporting membrane lipids on the activity of acetylcholinesterase
I. Tsukamoto, S. Yokono, H. Komatsu, K. Ogli (Japan) 447
The lateral pressure profile in membranes: a physical mechanism of general anesthesia
R.S. Cantor (USA) 451

Volume contents 459
Author index 463
Subject index 465